# Forest Health Protection









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# Tracking Forest Health Protection (FHP) Conducted Activities in FACTS

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#### **BACKGROUND**

The Forest Service Activity Tracking System (FACTS) database is used by silviculture/timber, range, fire, and other vegetation staffs to track activities completed on National Forests. Entries include spatial locations of activities stored as points, lines, and polygons (USDA 2016). Currently, accomplishments funded by Forest Health Protection (FHP) tied to bark beetle and defoliator suppression (e.g. carbaryl bole spray or pheromone applications such as verbenone or MCH), stand susceptibility reduction, white pine blister rust pruning, and other activities are input into FACTS as Forest accomplishments. However, activities conducted by FHP are not tracked in FACTS. No system currently exists to track or recall these FHP-conducted activities although many are of interest to National Forest managers.

For example, insect and disease specialists with FHP produce numerous trip reports annually describing insect and disease conditions within large analyses areas, silvicultural certification stands, recreation areas, and other high value sites. Numbered reports are also produced for special evaluations or monitoring projects. Locations of activities are noted in the reports, but no database is currently available that identifies relevant reports by location or key words, or tracks study areas.

We hope options become available in the future that facilitate retrieval of FHP reports and surveys on National Forest System (NFS), as well as other public or tribal lands where FHP provides assistance. However, Forest Service-supported database systems suitable for tracking FHP activities are currently limited and suitable only for information on NFS lands. Of the available systems, FACTS is deemed the most appropriate for use, with searches on key data attributes and spatial location. FACTS also allows for tracking information on 38 different ownership types if they are within or near NFS lands.

One reason for NFS to incorporate FHP-conducted activities into FACTS is to provide Region, Forest and District staff s with a method for storing and locating insect and disease information that may be of use to managers in the future. For example, root disease information for a new analysis area may not be available for specific treatment units, but information from FHP visits to neighboring stands could provide background to root disease impacts in the area. Entry in FACTS also allows FHP specialists, recreation specialists, or others who do not normally work in FACTS to recall the information using corporate tools in the NRM Geospatial Interface (GI) (Appendix B).

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This report suggests methods by which many FHP activities on NFS lands can be recorded and tracked for future recall. Entry is not obligatory, but for Forests that recognize the usefulness of tracking FHP-conducted activities, these outlined methods should be followed.

#### MAIN FHP-CONDUCTED ACTIVITIES

A review of FACTS National Activity Codes and the Northern Region (Region 1) Local Qualifiers identified many Activity Codes that record FHP-funded activities, some of which may be discussed in FHP trip reports. Only a few Activity Codes could be used to identify FHP-conducted activities. Many Activity Codes related to insect and disease activities are in the 8000's although most relate to management activities conducted by NFS. To determine the most appropriate codes for <a href="FHP-conducted">FHP-conducted</a> activities we reviewed how the codes have been used in the past, their current definition, as well as how codes might be changing in future updates of FACTS.

FACTS data entry protocols are described in this report for the following FHP activities.

# **REPORTS**

**Trip reports** are completed by FHP after most field visits. They address insect and disease findings, and relevant management options for recreation sites, administrative sites, certification stands, project areas, analysis areas, or other areas of interest.

**Numbered reports** are completed by FHP when a large monitoring project or special interest project is conducted. These projects and studies tend to focus on a management question rather than the conditions of a particular piece of ground relative to management. In some cases, studies will also result in a journal publication or other Forest Service (FS) publication. This is often the case with studies conducted in cooperation with FS or university researchers.

# FIELD SURVEYS, INVENTORIES, and STUDIES

As part of some field visits, special projects, or other work, FHP may collect detailed tree or stand data. Forest Insect and Disease Talley System (FINDIT) is one type of survey commonly done by FHP entomologists to measure bark beetle activity, but may be used for other pest surveys. Surveys using Common Stand Exam (CSE) or other protocols specific to the damage agent in question may also be conducted by FHP. Often this detailed data is collected as part of a monitoring project or in conjunction with FS Research or universities. If there is output data (sheets or electronic file), a record in FACTS is where the existence of that information could be recorded. The data itself may be located somewhere else, including personal databases or corporate files such as FSVeg (Bush and Fikstad 2017).

Data collection may be from monumented plots and tagged trees, especially for long term studies. However, monumenting or tagging may not be done, especially if the survey is not followed through time. To track the location of either type of project area, we suggest entering their presence into FACTS.

Note that Aerials Detection Survey (ADS) would not be recorded in FACTS because it covers most of the Region and is available in corporate databases as GIS layers.

### FHP-FUNDED MANAGEMENT ACTIONS

FHP does not manage land. Management actions on NFS may be funded entirely or partially by FHP and include such items as pheromone application, insecticide spray, white pine blister rust pruning, and dwarf mistletoe pruning. Any action taken to mitigate insect or disease related issues is accomplished by NFS staff (silviculture, recreation, wildlife, range, weeds, etc.) or contractors and recorded by the NFS as directed by the FACTS manager.

#### **FACTS PROTOCOLS**

Currently, the Northern Region does not have business rules for NFS-conducted activities funded by FHP. Often accomplishments funded in part or wholly by FHP are recorded using Activity Codes more closely aligned to the staff area that completed the work. For example, FHP-funded pruning to mitigate white pine blister rust is likely recorded in the 4000 series (4530-Prune) rather than 8000 series (8100-Disease Control). Activities conducted by FHP have not been tracked in FACTS because FHP does not manage lands, and activities they do are not NFS accomplishments.

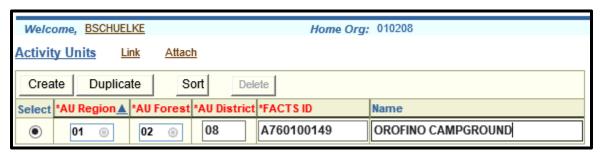
# **ACTIVITY UNITS and SUBUNITS**

The location data found in the Activity Units section of FACTS includes the required fields of Region, Forest, District, FACTS ID and the optional field Name (Fig. 1). Outlines for these units may be selected from a SubUnit ID number (SUID) boundaries or other outlines such as analyses area or recreation site boundaries, or may be created as a new polygon.

Note that current options for the 8000 Activity code is limited to polygons.

If a new feature is created for an FHP-activity, the additional decision will have to be made as to whether the activity applies to a new Unit or to a Subunit of an existing feature. For example, a trip report for an analysis area could be applied to the analysis area polygon, or the user could more specifically identify the field locations visited by choosing stands or treatment units for the Activity Unit or by creating Subunits. Because FHP study areas/plots locations are independent of other features in FACTS, these activities are likely to be created as new Units.

Both the decision on what boundaries to use for the Unit or Subunit and the creation of those boundaries in FACTS are left to Forest/District discretion.

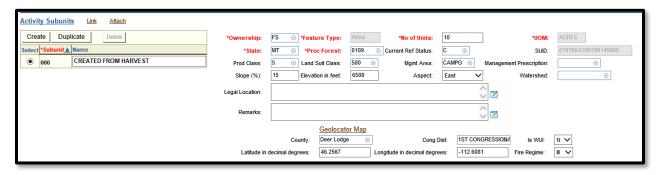


**Figure 1**. Screen shot of the Activity Unit information.

When no appropriate Activity Unit or Subunit currently exists in FACTS, or if the Forest choses to make all FHP-conducted activities their own Activity Unit, a new polygon will need to be

created. When creating a new Activity Unit it is recommended you use the "FHP" schema for the FACTS ID (R1 Supplement FACTS User's Guide, Chapter 4, Section 4.1). A description of the FHP schema is provided in Appendix A.

Newly created features require additional information (Fig. 2). For new Activity Units, data will be entered for Subunit 000; new Subunits will have a number greater than zero. Feature Type must be polygon. Small survey areas (e.g. fixed area plots) within a stand should be buffered to 2 acres to create a small polygon. No convention is given for "Name" on the Subunits, but it could include "FHP", the proper site name for recreation areas, or other information that may be useful in a search. (Note that the implementation project name is given in another section and can be used for searches, also.) Other required information regarding Ownership, State, and Proclaimed Forest will be default values for that District.



**Figure 2**. Screen shot of the Activity Subunit information.

#### ACTIVITIES – Program Area / Activity Codes

The Program Area of SILVICULTURE gives access to the 8000 Activity Codes. Because of proposed future changes to FACTS, it was suggested that one activity code be used for all FHP-conducted activities whether they be site visits or long term studies; in essence these are all "Forest Health Surveys". Although the most appropriate code appears to be **8010** (Insect and Disease Surveys), we have chosen to use **8000** (Insect and Disease Acts) because it has not been used for other activities within the Northern Region and would facilitate migration of this information to the new FACTS system in the future (Margaret Farrell, NRM WO FACTS Resource Information Specialist – personal communication).

<u>Other related activities</u>: Many studies, especially with FS Research, include stand treatments used to explore the effects of specific management actions. When treatments have been conducted, some additional information may be required in FACTS. For example, thinning or slash treatments completed by the Forest/District may be recorded by silviculture in the 4000 Codes, while the presence of study plots implemented by FHP (or their cooperator) would still be recorded in 8000. Similarly, selection of superior trees (Activity Code 4910) may include FHP participation, but is an activity completed by the Forest (e.g. silviculture). If these trees are part of an FHP-conducted study, they may also have an 8000 code to identify the presence of the study.

# ACTIVITIES - Local Qualifiers, Methods, and Equipment

Local Qualifiers given here for the 8000 Activity Code are specific to the Northern Region and were developed to capture nearly all FHP-conducted activities that may result in reports or data of interest to managers (Table 1) (Fig. 3).

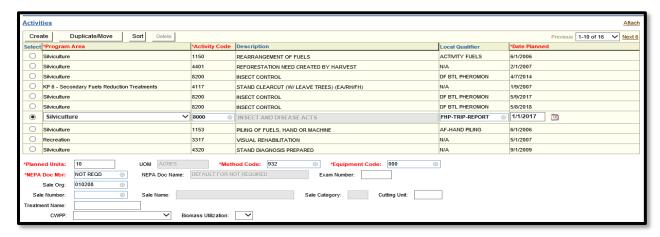
For activities under the 8000 Activity Code, there are a wide range of Method and Equipment Codes that could be considered. However, most surveys use protocols specific to insect and disease surveys (e.g. not standard NFS protocols). Thus, the use of Method Code 932 (Local Method) is most appropriate. Other Method Codes such as biocontrol or chemical were considered unnecessary due to the experimental nature and small footprint of these treatments within the 8000 Activity Code context.

Table 1. The following are the available Local Qualifiers and suggested Methods and Equipment Codes for use with the 8000 Activity Code.

ACTIVITY _CODE	ACTIVITY	LOCAL_QUALIFIER <sup>A</sup>	METHOD _CODE <sup>B</sup>	METHOD	EQUIPMENT _CODE <sup>C</sup>
8000	Insect & Disease Acts	NA¹	932	Local Method	000
	(all FHP-conducted activities)	FHP-TRIP-REPORT <sup>2</sup>	932	Local Method	000
		FHP-NMBR-REPORT <sup>2</sup>	932	Local Method	000
		FHP-OTHER-RPT <sup>3</sup>	932	Local Method	000
		FHP-STUDY-TEMP <sup>4</sup> (study-not monumented)	932	Local Method	000
		FHP-STUDY-PERM <sup>4</sup> (study-monumented)	932	Local Method	000
		OTHER-STUDY-TMP <sup>5</sup> (study-not monumented)	932	Local Method	000
		OTHER-STUDY-PRM <sup>5</sup> (study-monumented)	932	Local Method	000

AThese Local Qualifiers have been created for the Northern Region

<sup>&</sup>lt;sup>5</sup> Use when FHP is not the holder of the data or a significant participant in the project (e.g. liaison only). If FHP is not involved in the study, Activity Code 4040-Research Plots would be more appropriate.



**Figure 3**. Screen shot of the Activities descriptions.

<sup>&</sup>lt;sup>B</sup> Many Methods-Codes are possible; these are recommended

<sup>&</sup>lt;sup>c</sup> Many Equipment-Codes are possible; these are recommended.

<sup>&</sup>lt;sup>1</sup>Use NA when none of the following Local Qualifiers are appropriate

<sup>&</sup>lt;sup>2</sup> FHP trip reports are identified as MFO-TR-yy-## or CFO-TR-yy-##. FHP Northern Region numbered reports are identified as FHP Numbered Report yy-##. All are, or will be, available on the FS corporate storage system.

<sup>&</sup>lt;sup>3</sup>Other reports include journal papers, reports published by other staff or FS Research, other special publications, etc.

<sup>&</sup>lt;sup>4</sup> Use when FHP is lead or significantly involved with study and can be expected to provide info on the study and likely hold the data

# Implementation Projects:

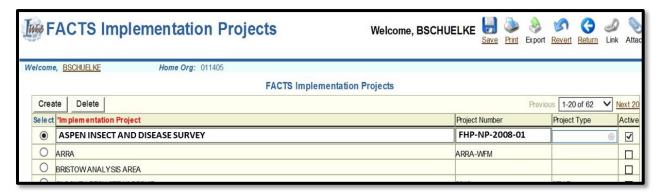
A Project Name and Number is not required for FHP reports (Fig. 4). However, it is needed for tracking of studies, especially for those that are monumented, longer duration projects that cross District and Forest boundaries. Note that Project Name and Number is similarly required for activities funded by FHP but accomplished by the Forest.

<u>Number provided by FHP</u>. The Project Number provided by FHP will likely follow the format of FHP-PN-yyyy-xx. Consistent use of this Project Name and Number allows tracking of all study activities across the Forest or Region.



**Figure 4**. Screen shot of the Implementation Project information entry.

Implementation Project Names and Numbers are entered into a different form (FACTS Implementation Projects) (Fig. 5), but once entered, becomes available in a drop down list within the activity data entry form. Note that several Implementation Projects can be attached to the Activity Code entry.



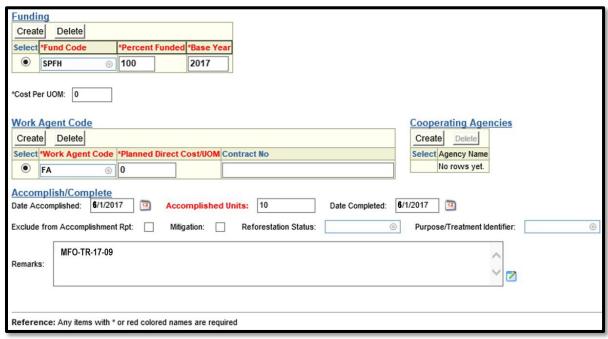
**Figure 5**. Screen shot of the FACTS Implementation Projects entry form.

# **Funding and Work Agent**

Activity Codes of 8000 are focused on FHP-conducted activities (either as project lead or as active participant) using FHP funds. We recommend defaulting to a Fund Code of "SPFH" with a Base Year indicating when the specific FHP-activity occurred. Work Agent Code of "FA" (Force Account) is also most appropriate. All other entries can be left blank or as the default value (Fig. 6).

# Accomplish/Complete

The Date Accomplished and the Date Completed are synonymous for FHP-conducted activities (Fig. 6). For reports, use the date of the report. For multiple historic reports, the most recent year of that batch of reports can be used. For activities related to surveys or studies the date should be provided by FHP.



**Figure 6**. Screen shot of the Funding, Work Agent Code, and Accomplish/Complete data entries.

# Accessing the FACTS data

Although entry of FHP-conducted activities will have to be done by NFS personal with proper access, retrieving FACTS activities can be done by anyone with access to the USFS ArcGIS system through Citrix at the Data Center. The Northern Region (along with other Regions and the Washington Office) have developed numerous tools in the <a href="NRM Geographic Interface">NRM Geographic Interface</a> (GI) (<a href="http://fsweb.nrm.fs.fed.us/applications/giclient/">http://fsweb.nrm.fs.fed.us/applications/giclient/</a>), many of which allow queries of the FACTS database without specific knowledge of the FACTS ID numbers (project area boundaries, SUIDs, or FHP activities, etc.). Appendix B outlines the process using the GI, by which anyone can obtain data stored in FACTS for a particular area of interest. If FHP reports and studies have been entered into the 8000 Activity Code, their spatial location can be identified.

#### **Additional Details**

<u>Finding Reports:</u> Additional detail is needed on both reports and studies for successful retrieval of the written report. Entries for FHP Trip Reports and FHP Numbered Reports since 1999 should provide the identification number (e.g. MFO-TR-15-01, Numbered Report 15-01) in the Remarks section of the Activity Subunit data page. Older trip reports do not have recognizable identification numbers so cannot be added easily. Journal publications and other publications should include the citation and web link, if appropriate.

FHP is in the process of transferring all trip and numbered reports from 1999 forward into the Northern Region EndNote library. The identification number can be used to locate the report documents in EndNote.

### Notes on Vegetation Management Plans

Individual specialist reports related to vegetation management plan (VMP) development in recreation and administrative areas can be recorded within the specialist's staff area of FACTS or other database (e.g. 4320-Stand Diagnosis prepared for silviculturist's report).

Input from FHP on damage agents, to be considered when writing a VMP, may be included in trip reports and could be retrieved by querying for all FHP reports identified under code 8000 in the area of the recreation site. Although the recreation sites SUID(s) may be used, if reports were not tied to the SUID (e.g. a new Activity Unit was created) it would be easiest to search for entries within the relevant geographical area using the Northern Region Geographic Interface (GI) (Appendix B).

The Recreation program currently tracks accomplishments in Infrastructure (INFRA). However, we suggest that when the final VMP is completed with input from all relevant staff and District Ranger signature it could be recorded in Activity Code 3102 (Recreation [General]) with a Local Qualifier that would indicate a completed VMP.

#### LITERATURE CITED

Bush, R. and T. Fikstad. 2017. R1 <u>Supplement to National FSVeg/CSE User's Guide. Region One Vegetation Classification, Mapping, Inventory and Analysis Report 16-6 v5.3. 1</u>.

Missoula, MT: USDA Forest Service, Region 1, Renewable Resource Management Staff. . <internally available at http://fsweb.r1.fs.fed.us/forest/inv/fsveg/supplement.shtml>

USDA Forest Service. 2016. <u>FACTS User Guide</u>. Washington DC: USDA Forest Service, Washington Office, Natural Resource Manager <internally at <a href="http://fsweb.nrm.fs.fed.us/support/docs.php?appname=facts">http://fsweb.nrm.fs.fed.us/support/docs.php?appname=facts</a>>

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## APPENDIX A: ACTIVITY UNIT FACTS ID - FHP Schema

The FACTS ID is a 10-character field used to identify the geographical area on which activities occur. Region 1 has developed a process for creating these FACTS IDs as described in the R1 Supplement FACTS User's Guide Chapter 4, Section 4.1. Many of these schema have been created to be meaningful to particular business areas; for FHP-conducted activities, the FHP schemata should be used.

The "FHP" schema represents Forest Health Protection-related activities. It begins with "FrHthP", followed by a 4-digit polygon number (XXXX). The polygon numbers are assigned sequentially or by any other method deemed useful to the Forest; 9,999 polygons in any Forest/District are possible.

Example: FrHthP0005

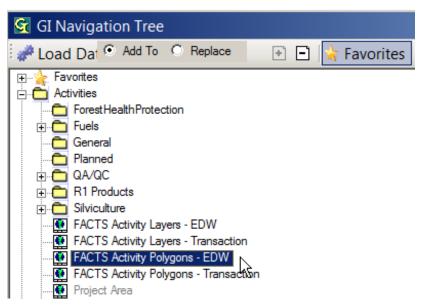
- FrHthP = FACTS ID schema that indicates Forest Health Protection conducted activity area
- 0005 = the 5<sup>th</sup> polygon of activity entered into the system; any numbering system the Forest/District wants to use is acceptable.

# APPENDIX B: Accessing FACTS data through the NRM Geospatial Interface

Region 1 has developed some NRM Geospatial Interface (GI) Guides located at NRGG GI SharePoint. Users that are new to ArcGIS or working in the USFS Corporate GIS environment are encouraged to become familiar with the "GI Client Citrix Quick Guide" and the "Getting Started with the NRM Geospatial Interface (GI)" documents on that web page.

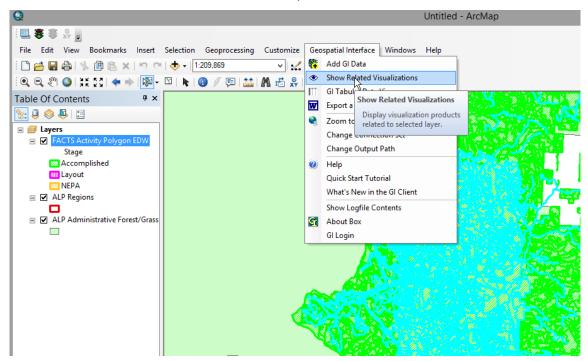
Once users are familiar with running the GI in ArcMap through Citrix, FHP related activities can be easily queried from the FACTS database.

1) Through the GI Add Data button, load the Facts Activity Polygons – EDW map

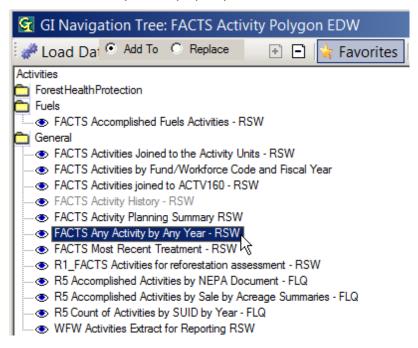


Zoom to the area of interest and select all FACTS polygons within that area; either through manual selection or using the *Select by Location* ArcMap tool. NOTE: You can run it on an entire Forest's FACTS layer, but it will take a bit of time.

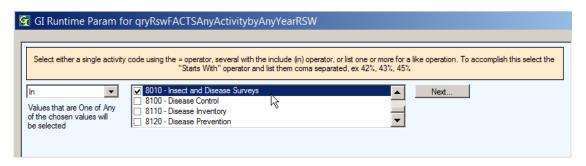
2) With the FACTS Activity Polygon layer highlighted in the ArcMap Table of Contents, select *Show Related Visualizations* from the GI Dropdown Menu or Toolbar.



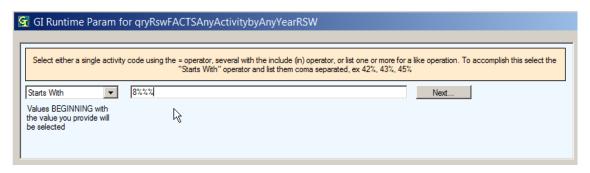
3) Run the FACTS Any Activity by Any Year – RSW visualization.



4) If only interested in 8000 or 8010 activities, choose the "In" operator in the first parameter box and select those two from the pick-list. Click "Next..."



Or, if interested in all 8000 codes (e.g., 8110, 8210, etc) choose the "Starts With" operator in the first parameter box and put 8%%% in the dialog box. Click "Next..."



5) Click the "Next..." button in the second parameter box



6) Select the year(s) you are interested in with the appropriate operator in the third parameter box. NOTE: the GI will only give the available years for the code(s) selected and the selected set. If a year does not appear in the drop-down, that code did not exist for that year in the selected set.



7) The result will be a new GIS feature class that meets your selection criteria (i.e., the tabular selection criteria within the subset of spatial features selected in Step 1. If you would like to keep this GIS Feature Class be sure to export or copy it to a favorite workspace.

